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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

CHEUNG, MANKO

ART UNIT

PAPER NUMBER

4154

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/594,083	Applicant(s) OTAKA ET AL.	
	Examiner MANKO CHEUNG	Art Unit 4154	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 September 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>25 September 2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because:

Legal phraseology “means” are found in the abstract (lines 3, 5, 6, 9, 11, 13, 17, 18). Such phraseology should be avoided.

Correction is required. See MPEP § 608.01(b).

2. Claim 9 is objected to because of the following informalities: “a displacement control signal” should be “the displacement control signal” referring back to claim 8, line 14. Appropriate correction is required.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 12-14 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 12, 13 and 14 recite, “A computer-readable computer program product containing a program that enables a computer to execute a displacement control signal correction method according to claim”, respectively.

The applicant claims a computer-readable computer program product in claims 12-14 (“A computer readable computer program product containing a program that enables a computer to execute a displacement control signal correction method

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according to claim..."). However, no such product (computer storage medium) could be found in the specification. Therefore, the applicant is simply claiming a program which does not fall within at least one of the four categories of patent eligible subject matter recited in 35 U.S.C. 101 (process, machine, manufacture, or composition of matter).

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claim 2 is rejected under 35 U.S.C. 102(e) as being anticipated by Arai (U.S. Patent No. 5,553,481).

Arai discloses a displacement control signal correction method for correcting a displacement control signal output (column 6, line 2-6) based upon predetermined reference characteristics of a displacement altering unit comprising (column 5, line 45-47); calculating a displacement control pressure corresponding to a target displacement based upon the reference characteristics (column 5, line 55-61), and correcting the displacement control signal through feed back control so as to reduce a difference between the displacement control pressure and a corresponding measured pressure (column 6, line 6-10).

7. Claims 3 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Kubota et al. (U.S. Patent No. 6,192,299).

Regarding claim 3, Kubota discloses a displacement control signal correction method for correcting a displacement control signal output (column 7, line 40-43) based upon predetermined reference characteristics (figure 6) of a displacement altering unit (figure 4, element 6), comprising: setting a reference displacement control signal and a reference displacement control pressure corresponding to a reference displacement (column 11, line 7-13) based upon the reference characteristics (figure 6), ascertaining a relationship between a predetermined displacement control signal and a pressure measured when the displacement control signal is output (column 11, line 16-21), calculating a displacement control signal needed to generate the reference displacement control pressure based upon the relationship having been ascertained (column 11, line 30-35), and calculating a difference between the displacement control signal and the reference displacement control signal (column 11, line 35-41).

Regarding claim 14, Kubota discloses a computer-readable computer program product containing a program (column 10, line 27-37, 45-48 also see figure 5, element 14) that enables a computer to execute a displacement control signal correction method.

8. Claims 2, 8, 13 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Kowatari et al. (U.S. Patent No. 6,101,456).

Regarding claim 2, Kowatari discloses a displacement control signal correction method for correcting a displacement control signal output based upon predetermined reference based upon the reference characteristics (column 10, line 52-56, figure 5). characteristics of a displacement altering unit (figure 1, element 3, column 10, line 9-12 and also see figure 2), comprising; calculating a displacement control pressure corresponding to a target displacement based upon the reference characteristics (column 12, line 45-56) and correcting the displacement control signal through feedback control so as to reduce a difference between the displacement control pressure and a corresponding measured pressure (column 16, line 32-39, the tilting angle is inherently control by the measure pressure).

Regarding claim 8, Kowatari discloses a displacement control device, comprising: a displacement altering unit (figure 1, element 3) that generates a displacement control pressure corresponding to a displacement control signal (column 10, line 15-19); an input unit (figure 1, element 17) that inputs a target displacement (column 8, line 60-61 and also see column 9, line 2-3, where the target displacement is inherently control by the inputs); a pressure detecting unit (figure 1, element 10) that detects a pressure corresponding to the displacement control pressure (column 9, line 8-9); a signal output unit (figure 4, element 12c) that outputs a displacement control signal (figure 4, element i) corresponding to the target displacement to the displacement altering unit (column 9, line 27-35) based upon the reference characteristics (column 10, line 52-53; figure 6 and 7); a setting unit (figure 4, element 12a) that sets a reference

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displacement control signal and reference displacement control pressure corresponding to a reference displacement, based upon the reference characteristics (column 10, line 52-53); and a correcting unit (figure 4, element 12) that calculates a displacement control signal needed to generate the reference displacement control pressure based upon a measured pressure detected by the pressure detecting unit (column 14; line 38-40 and line 51-55) when the displacement control signal is output by the signal output unit (figure 4, element 12c); calculating a difference between the displacement control signal and the reference displacement control signal and correcting the displacement control signal output to the displacement altering unit based upon the difference having been calculated (column 12, line 26-33).

Regarding claim 13, it is inherent that the device of Kowartari has a computer program in order to perform the functions since the controller 12 includes EPROM that performs the functions (col. 10, lines 34-60).

Regarding claim 16, Kowatri discloses a construction machine equipped with a displacement control device (column 8, line 50-52).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

11. Claims 1 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kowatari et al. (U.S. Patent No. 6,101,456) in view of Collins et al. (U.S. Patent No. 6,671,641).

Regarding claim 1, Kowatari discloses a displacement control signal correction method for correcting a displacement control signal output based upon predetermined reference characteristics of a displacement altering unit (figure 1, element 3, column 10, line 9-12, and see also figure 2), comprising; calculating a displacement control pressure corresponding to a reference displacement based upon the reference characteristics (column 10, line 52-56, figure 5); and calculating a correction pressure corresponding to a target displacement based upon the correction pressure

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characteristics (column 11, line 6-9, figure 6) and correcting the displacement control signal in correspondence to the correction pressure (column 11, line 12-15).

Kowatari does not disclose the method for determining correction pressure characteristics for correcting the displacement control signal (based upon a difference between the displacement control pressure and a corresponding measure pressure).

Collin teaches a method (column 3, line 39-45; column 4, line 36-38) to determine for correction pressure characteristics (column 4, table 3) based upon a difference between the displacement control pressure (column 4, table 2) and a corresponding measure pressure (column 3, table 1).

It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to correct the displacement control signal based on the correction pressure characteristics in the device of Kowartari to increase the performance of the calibration as taught by Collin (col. 5, lines 7-18).

Regarding claim 12, it is inherent that the device of Kowartari has a computer program in order to perform the functions since the controller 12 includes EPROM that performs the functions (col. 10, lines 34-60).

12. Claims 4, 6, 7, 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kowatari et al. (U.S. Patent No. 6,101,456) in view of Arai (U.S. Patent No. 5,553,481).

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Regarding claim 4, Kowatari discloses a displacement control device, comprising: a displacement altering unit (figure 1, element 3) that generates a displacement control pressure corresponding to a displacement control signal (column 10, line 15-19); an input unit (figure 1, element 17) that inputs a target displacement (column 8, line 60-61); a pressure calculating unit (figure 1, element 12) that calculates a displacement control pressure corresponding to the target displacement (column 10, line 34-38) based upon predetermined reference characteristics of the displacement altering unit (figure 7); a pressure detecting unit (figure 1, element 10) that detects a pressure corresponding to the displacement control pressure (column 9, line 8-9).

Kowatari does not disclose a correcting unit that corrects a displacement control signal corresponding to the target displacement input through the input unit based upon the displacement control pressure having been calculated by the pressure calculating unit and the measured pressure detected by the pressure detecting unit.

Arai discloses that a correcting unit that corrects a displacement control signal corresponding to the target displacement input (column 5, line 55 to column 6, line 6).

It would be obvious to a person of ordinary skill in the art at the time of invention was made to provide a correcting unit of Arai in the device Kowartari to correct the displacement signal. One would have been motivated to use correcting unit of Arai'481 such that the control displacement can be precisely corrected by the correcting unit (col. 1, lines 60-67).

Regarding claim 6, Kowatari discloses a displacement control device wherein the correcting includes: a pressure characteristics setting unit (column 10, line 53-54; figure 4, element 12b) that sets correction pressure characteristics corresponding to the target displacement (figure 5) based upon a difference between the displacement control pressure having been calculated by the pressure calculating unit (figure 1, element 12; column 10, line 34-38) and the measured pressure detected by the pressure detecting unit (column 9, line 8-9; figure 1, element 10). Kowatari also discloses a correcting unit that corrects the displacement control signal.

Kowatari does not disclose a correction pressure calculating unit and a correcting unit that corrects the displacement control signal so as to adjust an actual displacement to the target displacement in correspondence to the correction pressure.

However, Arai discloses a pressure characteristics setting unit that calculates a correction pressure (column 5, 55-61, figure 1, element 7) and the adjustment of an actual displacement to the target displacement in correspondence to the correction pressure (column 5, line 62 to column 6, line 6).

It would be obvious to a person of ordinary skill in the art at the time of invention was made to use the correction pressure calculating unit and the correcting unit of Arai in the device of Kowatari for high accuracy as taught by Arai (col. 1, lines 60-67). Moreover, in Kowatari, the adjustment of an actual displacement to the target displacement is correspondence to the correction displacement. It would have been obvious to adjust the actual displacement in correspondence to the correction pressure since the pressure and the displacement of an actuator is closely related.

Regarding claim 7, Kowatari discloses that displacement control pressure is calculated by the pressure calculating unit (figure 1, element 12) and the measured pressure detected by the pressure detecting unit (figure 1, element 10).

Kowatari does not indicate that the displacement control signal could be corrected through a feedback control by a correcting unit.

However, Arai discloses a correcting unit corrects the displacement control signal (column 5, line 55 to column 6, line 6) through a feedback control so as to decrease a difference (column 6, line 6-9) between the control pressure and measured pressure.

It would be obvious to a person of ordinary skill in the art at the time of invention was made to use the feedback control of Arai in the device of Kowatari for controlling the control pressure precisely. One would have been motivated to use the feedback control such that the measured pressure would approach the control pressure with minimum differences.

Regarding claim 11, Kowatari discloses a construction machine equipped with a displacement control device (column 8, line 50-52).

13. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kowatari et al. (U.S. Patent No. 6,101,456) in view of Arai (U.S. Patent No. 5,553,481) as applied to claim 4 above, and further in view of Kubota et al. (U.S. Patent No. 6,192,299).

The modified device of Kowatari does not disclose that the correction is based on the displacement control pressure that was calculated by the first measure pressure corresponding to a minimum displacement, which is detected while increasing the displacement, and a second measure pressure corresponding to a maximum displacement, which is detected while decreasing the displacement.

However, Kubota teaches that the measured pressure corresponds to a displacement, which is detected while increasing or decreasing the displacement (column 7, line 19-28). Kubota also teaches that the pressure of a hydraulic cylinder is measured at the same time while the position of the injection ram (figure 4, element 2) is being measured by the position sensor (figure 4, element 3). Furthermore, Kubota'299 (fig. 4) teaches that the displacement of the injection ram is result from the measure pressure (column 6, line 60-67). One would have been motivated to say that the first measure pressure corresponds to the minimum displacement because a displacement of the injection ram shown in Kubota'299 corresponds to a specific measured pressure while the displacement of the injection ram is increasing or decreasing; neither corresponds to the first, second or the last measurement.

It would be obvious to a person of ordinary skill in the art at the time of invention was made to modify the invention of Kowatari to specifically using the measuring method, as taught by Kubota, because Kowatari does perform the correction of the displacement control signal (column 14; line 38-40 and line 51-55) and, as suggested by Kubota, the combination would have improved the correction of the correcting unit and

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the measured pressure is precisely corresponds to the displacement (column 6, line 60-67)

14. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kowatari et al. (U.S. Patent No. 6,101,456) in view of Kubota et al. (U.S. Patent No. 6,192,299).

Kowatari discloses a correcting unit calculates a displacement control signal needed to generate the reference displacement control pressure (column 14; line 38-40 and line 51-55).

Kowatari does not disclose the calculation is based on the displacement control pressure that was calculated by the first measure pressure corresponding to a minimum displacement, which is detected while increasing the displacement, and a second measure pressure corresponding to a maximum displacement, which is detected while decreasing the displacement.

However, Kubota teaches that the measured pressure corresponds to a displacement, which is detected while increasing or decreasing the displacement (column 7, line 19-28).

Kubota teaches that the pressure of a hydraulic cylinder is measured at the same time while the position of the injection ram (figure 4, element 2) is being measured by the position sensor (figure 4, element 3). The embodiment (figure 4) discloses in Kubota teaches that the displacement of the injection ram is result from the measure pressure (column 6, line 60-67). It would be obvious that the first measure pressure

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corresponds to the minimum displacement because a displacement of the injection ram shown in Kubota corresponds to a specific measured pressure while the displacement of the injection ram is increasing or decreasing; neither corresponds to the first, second or the last measurement.

It would be obvious to a person of ordinary skill in the art at the time of invention was made to modify the invention of Kowatari to specifically using the calculation, as taught by Kubota, because Kowatari does perform the calculation of the displacement control signal (column 14; line 38-40 and line 51-55) and, as suggested by Kubota, the combination would have improved the calculation of the correcting unit and the measured pressure is precisely corresponds to the displacement (column 6, line 60-67).

15. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kowatari et al. (U.S. Patent No. 6,101,456) in view of Arai (U.S. Patent No. 5,553,481) as applied to claim 4 above, and further in view of Mizui (U.S. Patent No. 5,832,730).

The modified device of Kowatari does not disclose a filtering unit that filters a detection value provided by the pressure detecting unit so as to eliminate a vibration component from the measured pressure.

However, Mizui discloses a filtering unit (figure 1, element 15) to filters a detection value provided by the pressure detecting unit (figure 1, element 11B and 11H)

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so as to eliminate a vibration component from the measured pressure (column 4, line 42-50).

It would be obvious to a person of ordinary skill in the art at the time of invention was made to use the filtering unit with the displacement control device of Mizui in the modified device of Kowatari. One would have been motivated to apply the teaching of Mizui with Kowatari displacement control device such that the measure pressure value is more accurate by filtering the undesired component (col. 4, line 48-50).

16. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable by Arai (U.S. Patent No. 5,553,481).

It would have been obvious to automate and take official notice that well known automation includes the use of programmed computers which would have a medium and program. See In re. Venner 120 USPQ 192 and LeapFrog v. Fisher-Price 82 USPQ2d 1687.

17. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kowatari et al. (U.S. Patent No. 6,101,456) in view of Mizui (U.S. Patent No. 5,832,730).

Kowatari fails to explicitly disclose a filtering unit that filters a detection value provided by the pressure detecting unit so as to eliminate a vibration component from the measured pressure.

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However, Mizui discloses a filtering unit (figure 1, element 15) to filters a detection value provided by the pressure detecting unit (figure 1, element 11B and 11H) so as to eliminate a vibration component from the measured pressure (column 4, line 42-50).

It would be obvious to a person of ordinary skill in the art at the time of invention was made to use the filtering unit with the displacement control device Mizui the modified device of Kowatari. One would have been motivated to apply the teaching of Mizui with Kowatari displacement control device such that the measure pressure value is more accurate by filtering the undesired component (col. 4, line 48-50).

Conclusion

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MANKO CHEUNG whose telephone number is (571)270-7917. The examiner can normally be reached on Monday-Thursday 8am-5pm, Friday 8am-12noon.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seungsook (Robyn) Ham can be reached on (571)272-2405. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Seungsook Ham/
Supervisory Patent Examiner,
Art Unit 4154

/M.C./